LRT SOUTH CORRIDOR IMPACT MONITORING STUDY

LAND USE AND DEVELOPMENT TRENDS SUMMARY REPORT (1979-1983)

THE CITY OF CALGARY

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City of Calgary
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PREFACE

This report provides information on the land use impacts of light rail transit (LRT) in Calgary. Subsequent to the opening of the south LRT route, which commenced operation on May 25, 1981, both the City Transportation and the Planning & Building Departments have been undertaking impact studies.

The "LRT Impact Study" currently being undertaken by the Transportation Department addresses principally LRT impacts on transportation networks.

The "LRT South Corridor Impact Monitoring Program", designed as a parallel study by the Planning & Building Department, focuses on monitoring LRT impacts on urban development and socio-economic conditions as well as evaluating LRT-related land use policies.

The first phase of the study was conducted to monitor development trends along the South Corridor and to compare recent data with pre-LRT data identifying the impacts during this period.

The purpose of this summary report is to provide preliminary information relating to residential/commercial development trends, community impact and perceived effects on property values during the 1979-1983 period. It also examines the manner in which planning policy guidelines related to LRT have been applied.

The reader is advised to review all the reports published by both of the City Departments to obtain a more complete understanding of the impact of LRT. These reports document information from various sources and serve to complement each other. A list outlining the City of Calgary publications is provided in the Appendix.

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SUMMARY AND CONCLUSIONS

Since the South LRT line has been in operation for only three years, it is premature to reach definitive conclusions from the data currently available. However, the following observations can be made:

1. The LRT line has had a significant impact on land use approvals along the South Corridor. It has acted as a catalyst for development in station areas, as demonstrated by the amount and scale of land consolidation and development activities during the time-frame of the study (1979-1983).

2. There has been a sharp increase in property values in station areas. However, the degree to which LRT has impacted these values is uncertain. Other factors such as the general health of the economy and special characteristics of the Macleod Trail Corridor may have played an important role in influencing property value trends.

3. Based on discussions with various appraisal and real estate consultants, property value trends in suburban residential neighbourhoods along the outer portion of the line do not seem to have been negatively impacted by the presence of LRT. Conversely, some home-buyers expressed interest in locating in the vicinity of LRT stations.

4. The current slow-down in development activities and decrease in property values in station areas along the South Corridor are, in all likelihood, attributable to the prevailing economic conditions and market trends in the Calgary region. The extensive speculative activity and land use redesignations which occurred prior to 1982 in some station areas may very well have led to an over-supply situation, and thus impacted development trends and property values as well.

5. In general, many of the LRT South Corridor Land Use Study recommendations have been implemented. In particular, the LRT line has attracted a concentration of residential and mixed land uses in station areas as recommended in the Study. This would seem to indicate that to a certain degree, the objectives of the Land Use Study are being achieved. To minimize potential negative impacts from traffic and parking overspill in the surrounding areas, vehicle ownership and usage patterns of office employees and residents need to be monitored to evaluate the appropriateness of current parking policies. Some preliminary findings suggest caution in application of the parking relaxation policy, particularly involving residential developments, and a need to modify application of the development-related "Bonus System"[1].

6. In some cases, development densities and building heights have exceeded the Land Use Study recommendations, causing concern from abutting residential communities. On-going monitoring and analysis are required to identify potential impacts, particularly in station areas where development has taken place, in order to provide guidance for future LRT corridors.

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1. "Bonus System" - L.R.T. South Corridor Land Use Study, (Chapter C., Station Area Development Policies, pages 25-35), City of Calgary, Planning & Building Department, 1980.

   Preliminary observations relating to current application of the "Bonus System" are outlined in Section 6. of the Summary Report.

1. INTRODUCTION

In July 1980, City Council adopted the LRT-related land use policies as contained in the L.R.T. South Corridor Land Use Study and By-law 12P80, the related amendment to the Calgary General Municipal Plan. Not only do the approved policies establish planning approaches for the LRT South Corridor, but they also provide an overall guidance for the planning of future LRT corridors in Calgary's proposed city-wide system. It is important that these policies not be perceived as a static blueprint for the city's growth and development along the LRT corridors. The circumstances that existed at the time these policies were prepared have changed significantly and certain conditions may render elements of the policies obsolete or inappropriate. Therefore, to maintain these policies as an effective planning tool, a procedure must exist to "monitor" current issues, environmental impacts and social attitudes which may have strategic implications.

In response to this need, and as part of the Implementation Program of the Land Use Study, an Impact Monitoring Program has been established for the South LRT Corridor in Calgary. The responsibility for coordinating the Impact Monitoring Program is centralized within the City and Community Planning Division of the Planning & Building Department. The basic function of this program is the collection of information and the identification of issues that may have relevance to the established policies. Yet, to be strategic, the program must also analyze the information collected, give early warning of actual and potential problems and impacts, and monitor the performance of the policies.

To date, the main focus of the program has been directed towards the monitoring and evaluation of land use and development trends in the Primary Impact Areas of LRT stations. Changes occurring from the "pre-LRT" period of 1979-1981 to the "post-LRT" period of 1981-1983, are identified. Due to time and resource limitations, a detailed program for retrieving data pertaining to public viewpoints and LRT impacts on property and land values has not been established. However, a summary of preliminary findings is provided, facilitated by interviews and discussions with resource people from the City of Calgary Land Department, Calgary Real Estate Board, some major real estate agencies, as well as with several land owners and developers in the area.

Since commencement of the LRT service in the South Corridor, City Council has approved numerous LRT-related development proposals. A significant number of these proposals have been constructed and operative for several years, e.g. the Southland and Heritage Station areas. To facilitate a comprehensive evaluation of the existing LRT land use policies and to formulate effective impact management strategies, it would be of considerable value to carry out further studies, particularly by way of interviews and surveys, to obtain direct feedback information from the user public.

2. STUDY OBJECTIVES

2.1 To evaluate the impacts of LRT on land use, development, property and land values, and community stability.

2.2 To evaluate the appropriateness and effectiveness of current LRT land use policies.

2.3 To provide a systematic data base for policy formulation in future transit corridors.

LRT will continue to have a long-term impact on urban development. New development around station areas must be designed with the utmost care, to avoid causing instability and other negative environmental impacts on adjacent communities. The LRT land use strategy must strive to achieve a sensitive balance between the protection of communities and the skillful accommodation of an appropriate level of supportive development, while maintaining a high level of service to transit users.

The main thrust of the impact monitoring studies is, therefore, to ensure that the impacts of LRT-related development are assessed and controlled, particularly in terms of any adverse impacts on the established communities. The results of these studies are envisaged to assist policy formulation in future transit corridors, towards an improved integration of LRT with abutting communities, and in responding to inquiries from the general public. It should be remembered, however, that the South Corridor LRT alignment, for much of its length, parallels an existing rail line. Thus, the perceived impact of LRT in this Corridor may be different from that in other corridors where this situation does not prevail.

The scope of these studies, however, has had to be restricted due to current budget and resource limitations. In order to undertake further monitoring beyond what is encompassed by this report, it will be necessary for City Council to commit additional budget to this task and/or for funding to become available from other sources (e.g., Alberta Transportation).

3. STUDY AREA

The study area, as identified on Maps 1 and 2, encompasses the Primary Impact Area and the adjacent communities along the LRT route to the south of the Downtown.

Seven stations (ie. Stampede, Erlton, 42nd Avenue, Chinook, Heritage, Southland and Anderson) are currently serviced by LRT.[2] Canyon Meadows, Midnapore and Shawnessy are future station sites.[3] Subsequent to City Council's approval of the South LRT Extension Functional Study, on June 21, 1982, the study area boundaries were extended to include the area along the approved LRT extension for the purposes of data collection and monitoring of "pre-LRT" conditions.[4]

The Primary Impact Area, as defined in the L.R.T. South Corridor Land Use Study, relates to the following:

(a) the station areas - approximately a 400 metre radius/five minute walking distance from each LRT station site, and

(b) the intervening areas adjacent to the LRT alignment and/or Macleod Trail, as designated on Map 2.

These areas have been defined on the basis of either anticipated potential development opportunities and/or environmental impacts.

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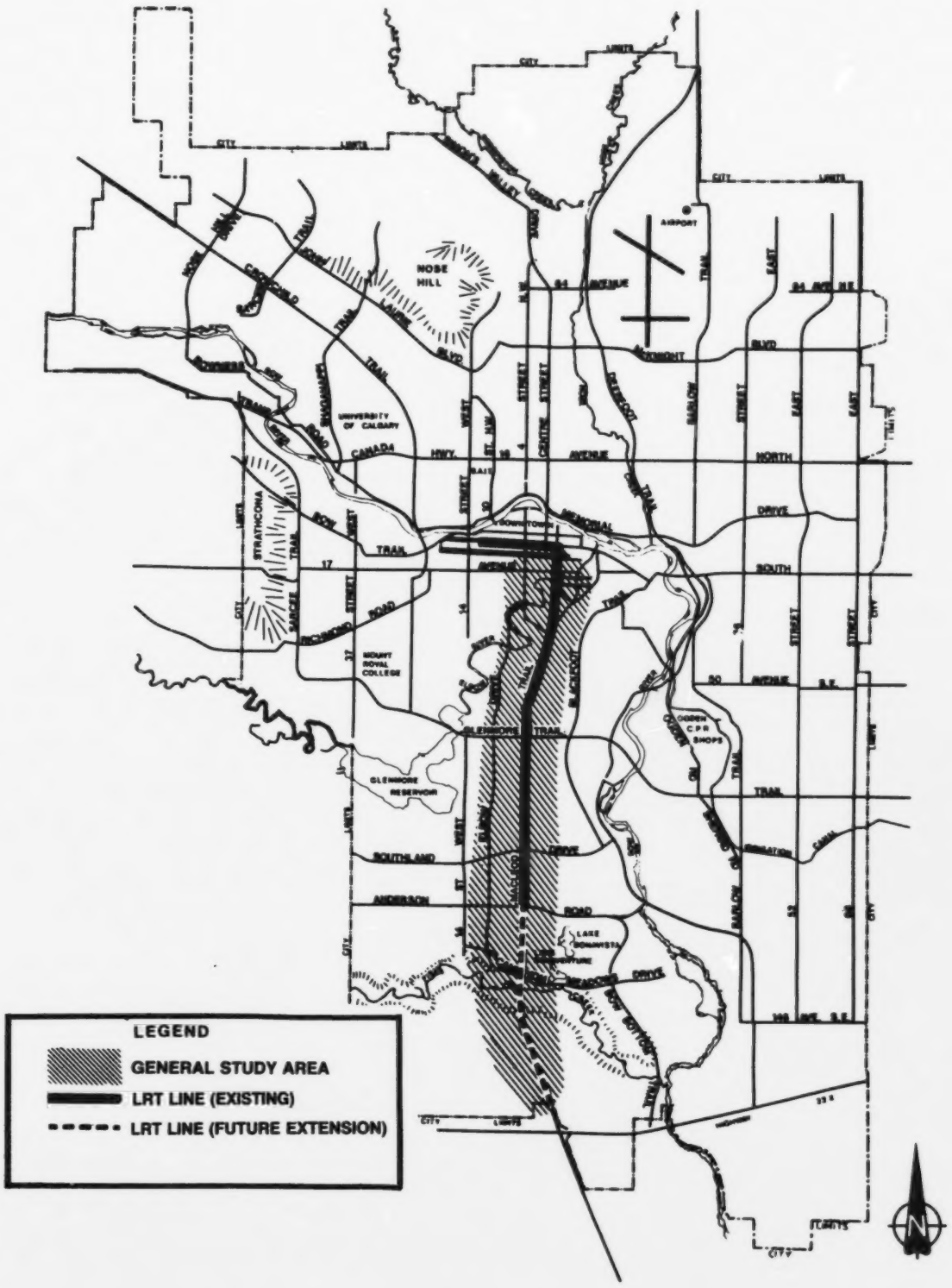
2. This area on the maps is referred to as the "post-LRT area".

3. This area on the maps is referred to as the "pre-LRT area".

4. Some preliminary information about the future LRT extension area is provided in the Appendix.

MAP 1 STUDY AREA IN CITY-WIDE CONTEXT



MAP 2 **STUDY AREA**

4. PRELIMINARY CORRIDOR-WIDE FINDINGS

4.1 The South LRT Corridor was subject to intensive land consolidations and land use redesignations during the 1979-1982 period.

This activity was particularly concentrated in the station areas in terms of land acquisitions for future development purposes. A number of comprehensive applications to amend the Land Use By-law accompanied this land acquisition process.

4.2 Land use amendments processed to date, mainly in the form of Direct Control (D.C.) Districts for residential, commercial and comprehensive mixed land uses, represent a total of 5,621 residential units, 1,016,980 square metres of commercial space and 1,844 hotel rooms.

Within the 1979-1983 period, a total of forty applications received approval for land use amendments in the seven station areas. According to preliminary data, however, only some 1,371 residential units, 204,396 square metres of commercial space and 140 hotel rooms have actually been proceeded with (i.e., either under construction or completed projects). Table 1 presents this information in detail.

4.3 Development activity during the 1979-1983 period was mainly concentrated in the Chinook, Heritage and Southland Station areas.

Along the Corridor there is a current supply of approximately 279,000 square metres of office space compared with between 1.5 - 2.0 million square metres of downtown core space. This represents a significant amount of office space in terms of total supply. The statistics referred to have been prepared by B.O.M.A. (Building Owners and Managers Association of Calgary, B.O.M.A. Calgary Newsletter, June, 1983) and a technical committee associated with the Downtown Citizens Committee. They conclude that there is an existing over-supply of leasable space in the Calgary market. Given the current economic recession, the over-supply situation is likely to intensify as projects now under construction are completed and added to the market place.

4.4 According to findings released by B.O.M.A., ". . . for many years the downtown commercial core was the principal source of supply for office space. Over the last five years and in anticipation of LRT-associated developments, some developers have chosen to locate their buildings adjacent to LRT stations . . . the majority of tenants in the south suburban offices are engineering firms, traditional suburban office users, junior oil companies that previously had offices in the downtown, support groups and branch office activities."

4.5 A number of developers and their agents have referred to the presence of LRT as one of the important factors as to why they have chosen to locate suburban office developments along the

MAP 3 LAND USE AMENDMENTS (1979-1983)

TABLE 1: LRT SOUTH CORRIDOR DEVELOPMENT ACTIVITIES AND TRENDS (1979-1983)
(as compared to Land Use Study recommendations for the planning period 1980-1991)

STATION AREA	DENSITY POTENTIAL (Land Use Study Recommendations)		LAND USE/DENSITY TRENDS (Currently Committed by Land Use Designations)			COMMENTS (Current Status)
	RESIDENTIAL (Units)	COMMERCIAL* (m^2)	RESIDENTIAL (Units)	COMMERCIAL* (m^2)	HOTEL** (Rooms)	
STAMPEDE	3,300	83,610	725	297,556	400	1/3 of the area currently committed by land use amendments. Completed: 103 units 6,169 m^2 comm.
ERLTON	1,000	83,610	584	20,580	300	None built.
42nd AVE.	3,150	83,610	196	69,414		Under construction: 196 units Completed projects: 7,432 m^2 comm.
CHINOOK	5,500	171,865	1,907	98,448	204	Under construction: 484 units 76,995 m^2 comm.
HERITAGE	1,950	97,545	1,041	216,251	500	Completed projects: 28,000 m^2 comm.
SOUTHLAND	3,000	206,238	1,168	290,775	440	Completed projects: 140 hotel rooms 588 units 85,800 m^2 comm.
ANDERSON	1,950	95,687		23,956		None built.
TOTALS	**19,800**	**822,165** (8,850,000 square feet)	**5,621*** **	**1,016,980*** ** (10,946,671 square feet)	**1,844**	Hotel rooms: 140 Residential units: 1,371 Commercial space: 204,396 m^2

* Figures in these columns relate to all types of commercial land use, including office, retail and hotel uses.

** This column indicates the number of hotel rooms proposed in mixed land use projects; floor area calculations for commercial include hotel uses.

*** The figures in these columns have been updated and readjusted at the time of preparation of this report in May, 1984.

NOTE: Graphical illustrations of the data are presented in the Appendix.

South Corridor. They see the C-Train as offering a major advantage to businesses that undertake some activities in the downtown core in that LRT provides quick, convenient access to the downtown from the suburbs without having to experience the aggravation of the parking problems found there. However, their comments also indicate other reasons for locating in the suburbs, which are common to other areas of the City not serviced by LRT. These reasons include:

(a) a distinct price advantage over downtown chiefly due to lower land costs;

(b) relative abundance of parking in the suburban locations as compared to downtown; and

(c) preference for the more relaxed environment of suburban work places by some people over the hustle and bustle of downtown.

According to spokesmen from various large development companies, as commented on in the June 1983 B.O.M.A. Newsletter, it is believed that the trend towards suburban office development will not have a significant impact on the downtown core: ". . . Calgary commercial core is strong, healthy and vital and will continue to be so for some years . . . In addition, there is a measurable diversification towards the banking and finance industry. Like the petroleum companies, financial institutions tend to cluster - witness Wall Street in New York or Bay Street in Toronto."

4.6 According to comments received from various appraisal and real estate consultants, there has been an observable higher rate of increase in land values in the station areas along the South Corridor compared with other areas of the City. This higher rate of land values in the station areas was related to the bouyant economy of the 1979-1982 period. However, specific data are not available to attribute, either wholly or partially, this increase to the LRT impact.

In the inner-city station areas, the increase in residential land values appears to correlate inversely with the distance from the LRT station. This was apparent in land consolidations undertaken in the Stampede and Erlton Station areas. Residential land parcels within the comparatively stable suburban LRT station areas were more subject to the general influence of regional economic trends, similar to other parts of the City.

Current property value trends along the South Corridor in general reflect the prevailing economic conditions in the Calgary region.

Listed prices of various land parcels sampled ranged from $16 per square foot (0.0929 square metres) in 1979 to $70 in 1983. Current market conditions are poor and there is a city-wide dearth of land transactions. Sale prices along the corridor reflect a median of $37 - $40 per square foot, and are presently dropping at a rate of about three percent per month.

4.7 Land consolidation and development activities related to the South LRT Corridor significantly slowed down during the 1982-1983 period, due to regional and national economic conditions and market trends. These prevailing conditions have also, of course, affected the activity patterns in other areas of the City.

Some of these prevailing conditions include the following:

(a) The down-turn of the provincial economy during the 1982-1983 period is most noticeable in the construction industry.

(b) Alberta was the only province to record a drop in urban housing starts. High vacancy rates in apartments and the prevalent economic uncertainty in the province are all held to be responsible for the deterioration in residential construction activity.

(c) The downtown office vacancy rate is estimated at twenty percent, and this situation is not expected to improve dramatically next year. The vacancy rate along the South Corridor is slightly higher.

(d) Net rental rates for downtown office space range between $10 to $18 per square foot. In suburban areas, rates vary between $8 - $12, and are dropping.

(e) Residential vacancies may now be close to twenty percent across the City, and rents on average have fallen by twenty-five percent since the economic slump began in the first half of 1982.

(f) Economic conditions also changed the population movement within the country. During the first half of 1983, Alberta's net migration was an outflow of 4,000 people, following a net loss of 3,400 in the fourth quarter of 1982. In the 1982-1983 period Alberta lost 7,200 people in twelve months, whereas a year earlier it had gained 38,000 new residents.

(g) Recent statistics show that in September 1983, Alberta's unemployment rate was 10.5 percent. In Edmonton 11.6 percent, and in Calgary 11.4 percent of the labour force was without work. Double digit unemployment rates are also projected througout 1984.

(Sources: City of Calgary Planning & Building Department Statistics; Globe & Mail, October 17, 1983; and Calgary Herald, October 5, 1983.)

5. PRELIMINARY STATION AREA FINDINGS

The following preliminary observations are made with respect to the large-scale development proposals located in the vicinity of the South Corridor stations:

5.1 Stampede and Erlton

Development of comprehensive residential and mixed land use proposals slated for the Stampede and Erlton Station areas is dependent on market demand and regional economic conditions. Impacts experienced to date include: dislocation of area residents; loss of inner-city housing; increased uncertainty in an already unstable neighbourhood; poor maintenance of existing housing stock; and spread of land consolidation activity into the conservation area in Erlton. As a result of the current economic conditions, these impacts are likely to remain for a longer period than would be the case if improved market conditions prevailed.

5.2 42nd Avenue

A residential development project (high-rise apartment building), currently under construction in 1983 along Macleod Trail, represents a major shift from the traditional highway-commercial type land uses.

5.3 Chinook

As with the 42nd Avenue Station, there is a trend to locate residential and residential/commercial mixed land uses in this area. This is in contrast to the office and industrial developments that, until recently, have been replacing residential development in the Manchester district.

5.4 Heritage

A second phase of the "Heritage Square" project, planned for mixed land uses including 385 residential units, did not proceed in 1983 due to unfavourable economic conditions.

5.5 Southland

An apartment complex, as the first phase of a comprehensive mixed use development, is presently renting. A second phase of the project did not proceed in 1983 due to unfavourable economic conditions.

Other high density mixed use developments in the area include facilities such as retail uses, restaurants, cinemas, racquet courts and a family fitness centre.

5.6 Anderson

Apart from the professional building at South Centre, there has been no development activity since 1979.

5.7 Pre-LRT Area (Canyon Meadows, Midnapore, Shawnessy)

The Lake Bonavista Design Brief Amendment, approved by City Council on September 6, 1984, outlines the land use patterns, densities and development guidelines for an orderly development of the land parcels to the east of Macleod Trail in the vicinity of the future Canyon Meadows station area. Development of anticipated residential, office/retail commercial and mixed land uses in the area, would be dependent on market demand and regional economic conditions.

The Midnapore, Millrise, Shawnessy and Sundance low to medium density residential subdivisions are currently developing to the east and west of the Midnapore and Shawnessy station sites along the future LRT-line. A variety of local commercial and office developments also have taken place.

Recent land use designations for a regional employment centre and a future hospital use in the vicinity of the Shawnessy station site, indicate some impact in terms of land use in anticipation of a future LRT-line.

6. PRELIMINARY OBSERVATIONS RE: POLICY APPLICATIONS

Application of the LRT-related development policies pertaining to "parking" and the "bonus system" were also reviewed during the course of the South Corridor monitoring study. The following section provides some preliminary information about the current performance of these policies.

6.1 Background Information

The implementation techniques of the "parking" policies and the "bonus system" are outlined in Chapter C. Station Area Development Policies (pages 25 - 35) of the L.R.T. South Corridor Land Use Study (1980). In summary, these relate to the following:

The **Parking Policy** framework sets forth the type of land uses and situations where parking relaxations from the Calgary Land Use By-law standards may be considered. Dependent upon comprehensive reviews of individual development proposals by the Planning & Building and the Transportation Departments, the allowable parking relaxations are considered to be in a range of between zero to twenty percent.

The **Bonus System** is intended as an implementation technique to support and encourage new developments which will provide benefit features in LRT station areas.

Public Benefit Features are defined as various types of amenities related to pedestrian circulation, parking, services and facilities, open space and other ancillary on-site features.

The application of the **Bonus System** yields a range of additional development potential and/or parking relaxation for each site, subject to limits established by the station area plan and the station area development policies for parking provision.

6.2 Relaxation of Parking Requirements

Among the land use amendments processed to date, parking relaxations were applied to various mixed land use projects. Depending on the merits of individual development proposals, these relaxations of parking requirements ranged from ten to thirty-nine percent, based on the proposed composition of land uses and their magnitude.

An inquiry was made to investigate the vehicle ownership pattern of tenants in the new apartment complex of a mixed land use project north of the Southland LRT Station. The overall project, which will be developed in various phases, will include 864 apartment units, 300 hotel rooms, commercial office/retail uses, amenity areas and 2100 parking stalls, of which ninety percent will be provided underground.

According to comments received, seventy percent of the 278 units are rented. Residents are mainly professionals in the 30-45 age range and prefer the proximity to LRT; fifty to sixty percent of them work downtown. Among other services to building residents, a complementary free shuttle service to the LRT station is provided. Parking allocation for the building currently is one hundred and fifteen percent, and the vehicle ownership pattern of tenants also indicates a similar percentage. Approximately eighty-five to ninety percent of the tenants have one car; fifteen percent of them have two cars; and a few of the tenants have three cars.

In this particular case, the figures indicate that the vehicle ownership pattern of the tenants in a high-density residential development adjacent to a suburban LRT station is similar to vehicle ownership patterns of residents in a comparable non-LRT location.

It is premature to reach a definite conclusion from these preliminary figures. Further studies are needed to examine the vehicle ownership and usage patterns of office employees and residents, as well as the shared-use of parking in mixed use developments, in order to evaluate the appropriateness of the current parking policies.

In the meantime, however, these figures suggest caution in application of the parking relaxation policy, particularly involving residential developments, until substantial data verifies a decrease in the trend relating to the vehicle ownership pattern of tenants.

6.3 Implementation of the Bonus System

In the summer of 1983 a study was conducted to review application of the Bonus System. The purpose of the study was to evaluate the bonus ratios recommended in the LRT Land Use Study, and to determine if these ratios are equitable for both the developer and the City.

Throughout the study, various City Departments and private industry representatives were consulted. A survey was sent out to developers, real estate companies, appraisers and architects, to determine their views on the Bonus System, how it works and how they assess the bonus ratios in terms of cost/benefit/recovery factors. The response has been weak. Only twenty percent of the survey forms have been returned. The lack of detailed responses restricts the application of the information received.

The following is a summary of the findings:

(a) **In general, many of the LRT Land Use Study recommendations relating to public benefit features have been applied and implemented.**

The strong emphasis on the provision of public benefit features in the station areas has yielded intensive allocation of various types of amenities in development proposals.

Examples of projects built to date include an atrium in the "Heritage Square" complex, on-site private/commercial amenities in the residential complex of the comprehensive "Southland Centre" project, as well as other public amenities and recreational facilities such as movie theatres, restaurants and physical fitness centres in the "Southland Plaza" and the "Southland Commercial Park" developments. The public benefit features in proposed developments include similar amenities, parks and a large number of elevated pedestrian bridges over the major thoroughfares in the area. These pedestrian connections, which are committed as components of comprehensive development proposals will, in the future, form an integral part of the primary pedestrian network in each station area.

(b) **Difficulties have been encountered in establishing a direct relationship between the bonusable densities, the bonus ratios and the total amount of space relating to the amenity features proposed in developments.**

The quantity and variety of the public benefit features proposed by the developers, in many instances, exceeded the corresponding bonusable densities. In a majority of the cases, the amenity features (such as the examples cited above) were achieved within a density range - floor area ratio (F.A.R.) of 2.0 to 4.0.

It is interesting to note that, in general, extensive density bonuses were neither required nor requested in the allocation of a large variety of the amenity features with the exception of a few development proposals in which excessive densities were sought. According to comments received from various members of the real estate industry, this was partly due to current competitive market trends towards developing residential and suburban office buildings that offer good design and floor plan, pleasant features, recreational and other amenities.

(c) **Changing economic conditions and the various costs involved in the development of a building (i.e., land acquisition, construction and financing costs) also have identified problems associated with the implementation of the bonus ratios.**

Various alternative formulas were utilized, within the scope of the study, to mathematically evaluate the bonus ratios in terms of cost/benefit/recovery factors. All formulas were subject to several variables and, therefore, did not accurately reflect the costs and benefits for the developer and the City over a long period of time. The fluctuations in the cost factors of variables over time restrict the validity of any formula to the time period studied.

In conclusion, the survey responses indicate a general support for the use of a set of bonus criteria as a guide for concept design and review processes of LRT-related developments. It is felt that allocation of a variety of public benefit features in new LRT-related developments should continue to be encouraged.

However, the results of the preliminary evaluation as well as the survey responses identify a need to revise the current Bonus System and its corresponding bonus ratios. It is suggested that a guidebook should be developed, replacing the current Bonus System, which outlines a set of definitions, objectives, design criteria and priorities for various types of public amenities.

Application of Direct Control (D.C.) Districts seems to be a suitable implementation technique, because of the unique features of individual development proposals. The emphasis should continue to be placed on the outstanding merits of individual projects during comprehensive reviews by the Approving Authorities.

The LRT Land Use Study states on page 26: ". . . within station areas, the circulation of pedestrians shall be an important factor in achievement of overall objectives for successful, intensive development oriented to transit areas." This goal should be a primary consideration in reviewing all developments, including open space components.

In regards to the utilization of the current Bonus System, the terms identified as "public open space at-grade" and "public open space above-grade" provide no direction for public open space. Benefit feature provisions, particularly relating to pedestrian circulation and public open space type amenities, should be considered under "negotiable" terms replacing bonus ratios. That the primary purpose of a modification to the current Bonus System should be to establish criteria and priorities for the types of open space desired. The following are suggested:

(a) Replace the terms "public open space at-grade" and "public open space above-grade" with one term "public amenity space". The term "public amenity space" could be adopted from an existing term "amenity space" in the Land Use By-law.

(b) Develop a definition for the term "public amenity space".

(c) Establish a breakdown of types of "public amenity space" into distinctive categories each with their own definitions, objectives, criteria and priorities.

(d) Replace the bonus ratios in the current system with assigned priorities for various types of "public amenity space" under a general "negotiable" category. For example, a priority ordering of 1 (high), 2 (medium) and 3 (low) would give a weight to the desirable types of public amenity space needed in the station areas.

(e) In order to clarify the public amenity space needs in individual station areas, the station area plans or area redevelopment plans should outline the desired types of public amenity space which would enhance the station area, and in particular, primary pedestrian corridors.

A further study would need to be undertaken for the appropriate revision of the current Bonus System. To this effect, a timeframe would need to be established and allocated in the work program for the task.

THE CURRENT BONUS SYSTEM

BENEFIT FEATURES	MANDATORY		ELECTIVE WITH BONUS	RATIO OF UNIT AREA OF BENEFIT FEATURE TO BONUS
	NO BONUS	WITH BONUS		
Movement-Related				
1. Pedestrian Circulation				
- Primary Corridor		X	X	
- Secondary Corridor including:			X	
o at-grade walkways				1:5
o arcades				1:10
o malls				1:15
o bridges				1:30
o elevated streets and other grade-separated connections.				Negotiable
2. Parking Provision				
Underground Structure			X	5:1
3. Integration with Transit Facilities				
- Comprehensive development incorporating transit facilities and operations		X dependent on site	X dependent on site	Negotiable
Development-Related				
1. Public Services and Facilities including non-commercial recreational, cultural, institutional, services.			X	Negotiable
2. Public Open Space	X (Basic By-law Requirement)		X	
- At-grade				1:15
- Above-grade				1:10*
3. Ancillary On-Site Amenities	X (Basic By-law Requirement)		X	Negotiable
- Private Amenities				
- Communal Amenities				

* The ratio of 1:10 for open space should be a maximum available only where the open space is readily accessible and visible from grade and/or the +15 system.

SUGGESTED CHANGES

BENEFIT FEATURES	MANDATORY		ELECTIVE WITH BONUS	RATIO OF UNIT AREA OF BENEFIT FEATURE TO BONUS PRIORITY ORDERING
	NO BONUS	WITH BONUS		
Movement-Related				
1. Pedestrian Circulation				
- Primary Corridor		X	X	Negotiable
- Secondary Corridor including:			X	
o at-grade walkways				
o arcades				
o malls				
o bridges				
o elevated streets and other grade-separated connections.				Negotiable
2. Parking Provision				
Underground Structure			X	5:1
3. Integration with Transit Facilities				
- Comprehensive development incorporating transit facilities and operations		X dependent on site	X dependent on site	Negotiable
Development-Related*				
1. Public Services and Facilities including non-commercial recreational, cultural, institutional, services.			X	Negotiable
2. Public Open Space	X (Basic By-law Requirement)		X	
3. Ancillary On-Site Amenities	X (Basic By-law Requirement)		X	Negotiable
- Private Amenities				
- Communal Amenities				

* Further work would be required to develop a definition for the term "public amenity space"; to establish distinctive categories each with their own definitions, objectives, criteria and priorities.

APPENDIX

APPENDIX

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	2. RESIDENTIAL DEVELOPMENT ACTIVITIES AND TRENDS	26
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APPENDIX A

FIGURES 1 & 2 illustrate comparisons of the following resource information:

1. MARKET DEMAND FORECASTS (URBANICS) (1979 - 1991)

Urbanics Consultants Limited was commissioned in 1978 by the Planning & Building Department to study the market development opportunities along the South LRT Corridor.[5] The purpose of the study was to obtain information relating to developer intensions and potential market demand for transit-related land uses in the vicinity of the LRT stations, for the period of 1978 - 1991. This information was used as one of the criteria for the evaluation of various land use options and density ranges considered during the course of the LRT Land Use Study.

The Consultants' study provided estimates of the total market potential for high density residential, office, retail/commercial and hotel uses throughout the City of Calgary, and the potential market share of the various land uses along the Macleod Trail/LRT Corridor. These estimates were based on factors such as historical trends, population, employment and city-wide growth rate projections.

The graphics illustrate the estimates of commercial space and residential units as a potential market share of future development in each of the LRT station areas.

2. LAND USE STUDY RECOMMENDATIONS (1980 - 1991)

During the course of the LRT Land Use Study, the Transportation Department of the City of Calgary reviewed the land use alternatives proposed for each of the LRT station areas. The purpose of this analysis was to determine the density limits for development/ redevelopment in consideration of the site-specific access constraints and roadway capacities as well as possibilities for improving the road system to allow for increased development density during the planning period 1980 - 1991. Due consideration was also given to the optimum mix of development options (i.e., residential, commercial) that would be supportive of LRT.

The results of this evaluation are outlined in the L.R.T. South Corridor Land Use Study in "Part III Appendices - Section G. Transportation Impacts of Redevelopment Along Macleod Trail" (pages A59 - A78). The estimated figures identify the density limits and the recommended optimum mix of development options in each of the station areas for the planning period 1980 - 1991.

The figures and the graphic illustrations identified as the "Land Use Study Recommendations" in the summary report, relate to these estimates.

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5. "A Study of the Market Development Opportunities in the L.R.T. South Corridor Land Use Study", Urbanics Consultants Limited, February 1979.

It should be observed that the Land Use Study Recommendations suggest a maximum development framework which, if totally realized, could provide accommodation for 40,000 to 50,000 people, as well as commercial development roughly equivalent to that allowed by the existing land use designations. The existing land use designations for commercial land use types particularly would provide for a much higher volume of development potential at some station areas. The maximum development potential, on the other hand, is not expected to be realized for a long period of time. However, the transportation-constrained development ceiling for each station should continue to be taken into consideration in the development review process of the implementation program for the planning period 1980 - 1991.

3. CURRENTLY COMMITTED BY LAND USE DESIGNATIONS (1979 - 1983)

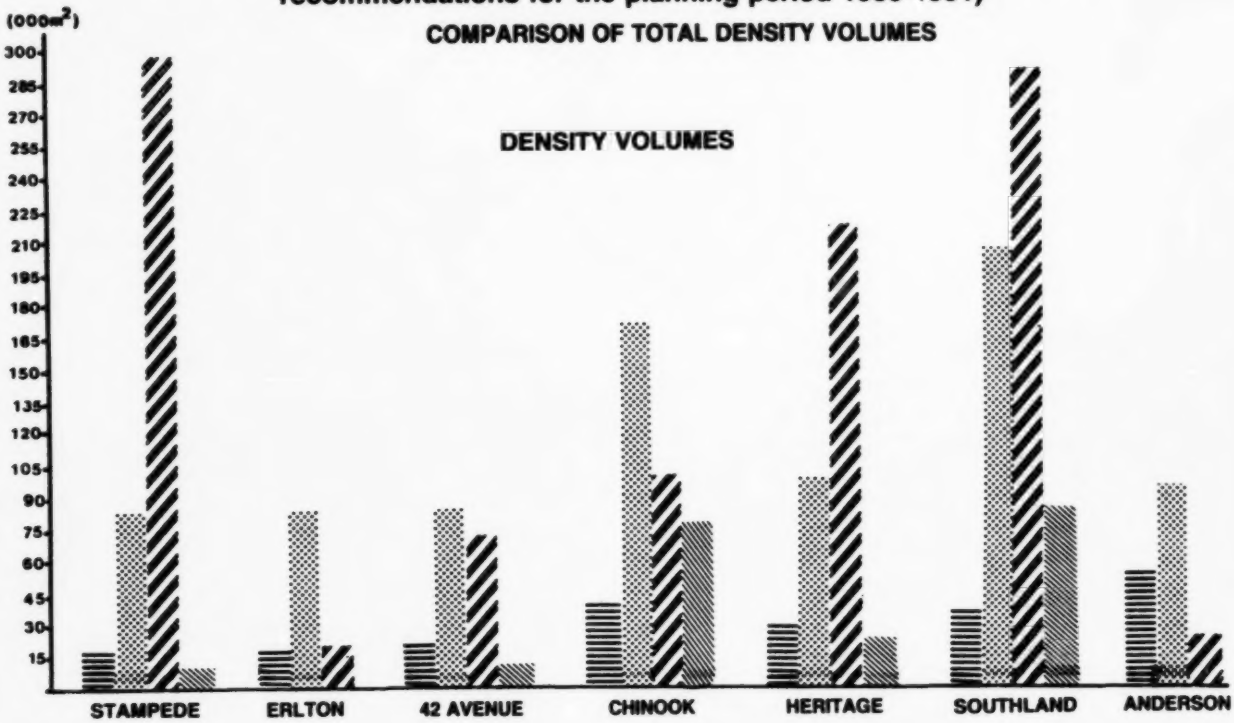
The graphics illustrate the aggregate density volumes of currently approved development projects.

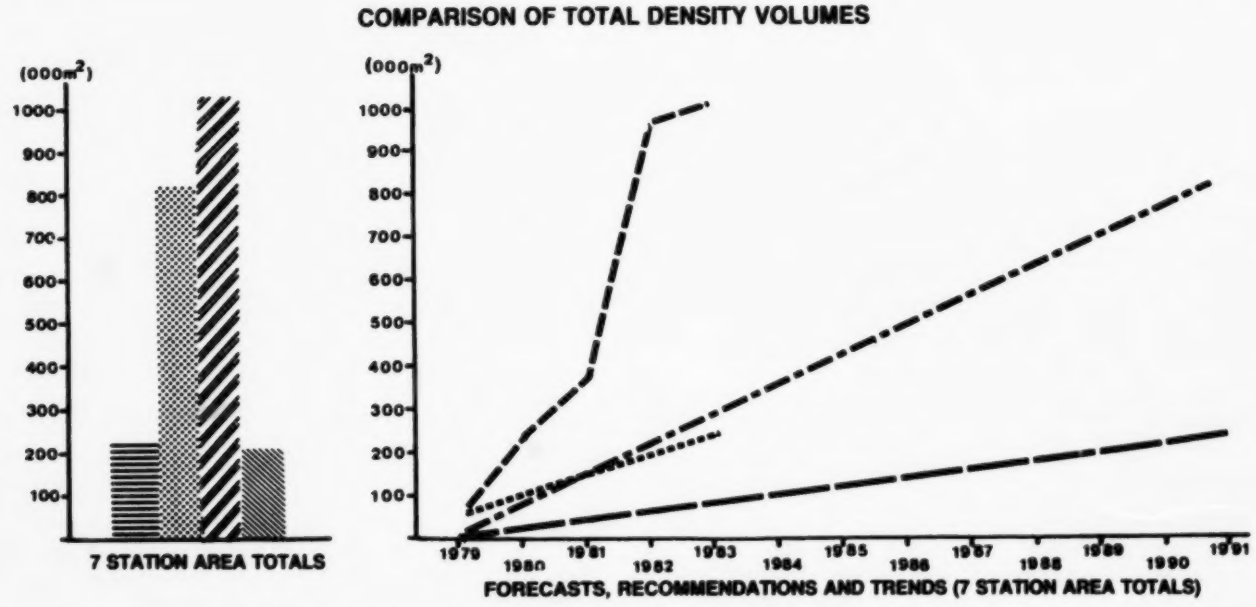
4. UNDER CONSTRUCTION/COMPLETED PROJECTS (1979 - 1983)

The graphics illustrate the aggregate density volumes of development projects which currently are either under construction or completed.

FIGURE 1 LRT SOUTH CORRIDOR COMMERCIAL DEVELOPMENT ACTIVITIES AND TRENDS (1979-1983)

(as compared to market demand forecasts and the Land Use Study recommendations for the planning period 1980-1991)





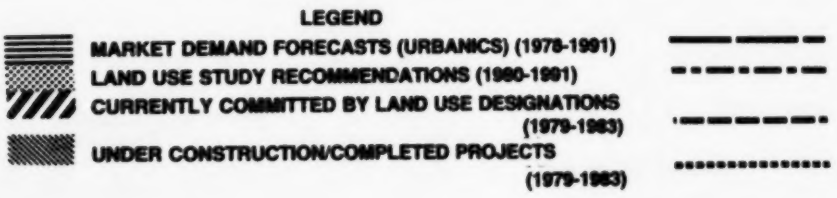
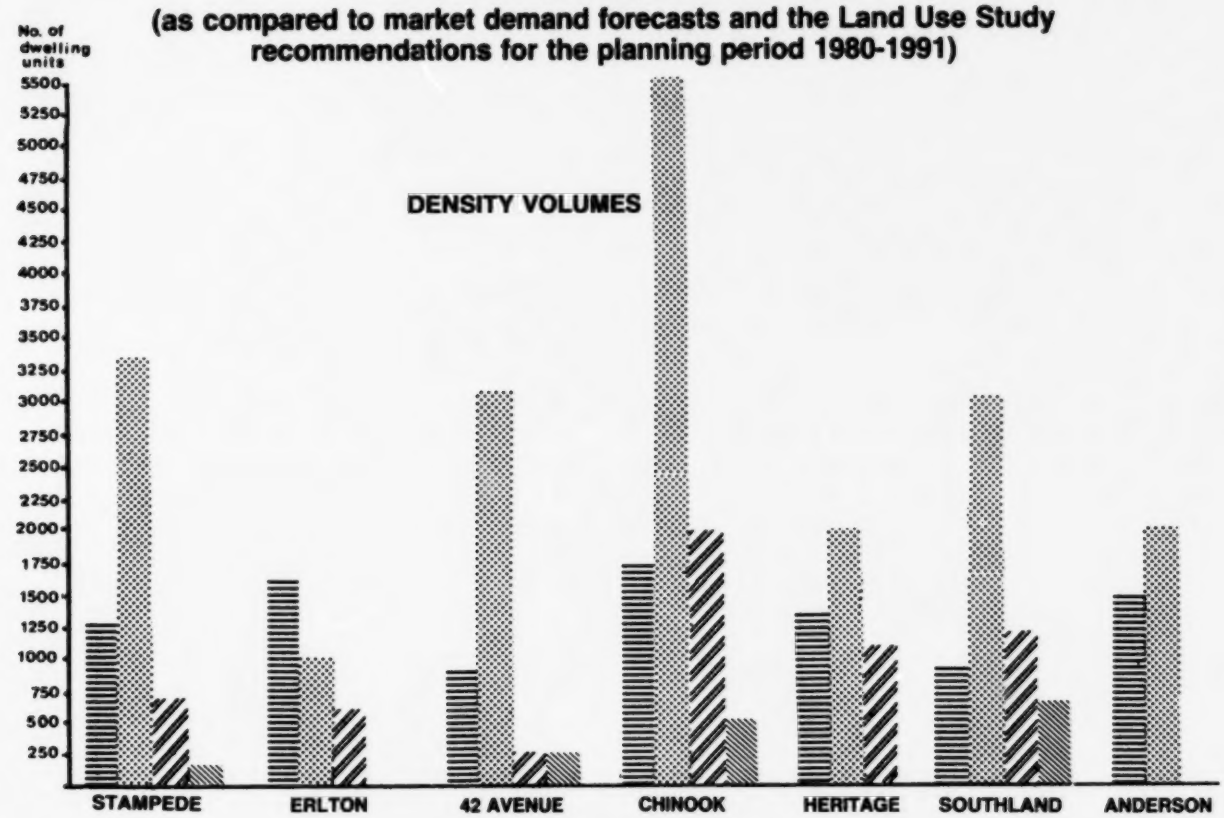
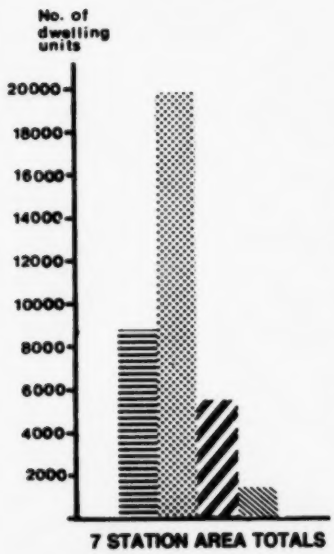

LEGEND
MARKET DEMAND FORECASTS (URBANICS) (1978-1991)
LAND USE STUDY RECOMMENDATIONS (1980-1991)
CURRENTLY COMMITTED BY LAND USE DESIGNATIONS (1979-1983)
UNDER CONSTRUCTION/COMPLETED PROJECTS (1979-1983)

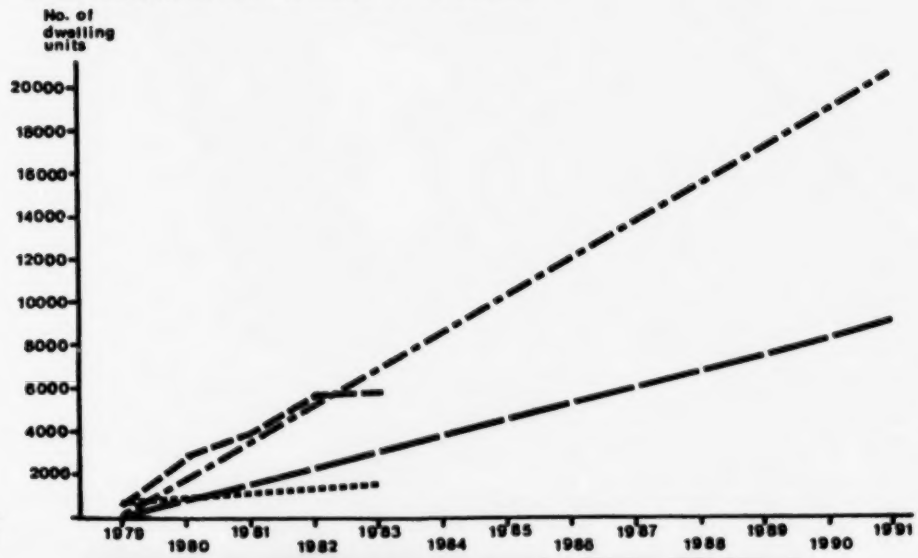
FIGURE 2 LRT SOUTH CORRIDOR RESIDENTIAL DEVELOPMENT ACTIVITIES AND TRENDS (1979-1983)

(as compared to market demand forecasts and the Land Use Study recommendations for the planning period 1980-1991)



COMPARISON OF TOTAL DENSITY VOLUMES





LEGEND

- MARKET DEMAND FORECASTS (URBANICS) (1978-1991)
- LAND USE STUDY RECOMMENDATIONS (1980-1991)
- CURRENTLY COMMITTED BY LAND USE DESIGNATIONS (1979-1983)
- UNDER CONSTRUCTION/COMPLETED PROJECTS (1979-1983)

FIGURE 3 LRT SOUTH CORRIDOR LAND USE AMENDMENTS (1979-1983) APPROVED DEVELOPMENT HEIGHTS AS COMPARED TO LAND USE STUDY RECOMMENDATIONS

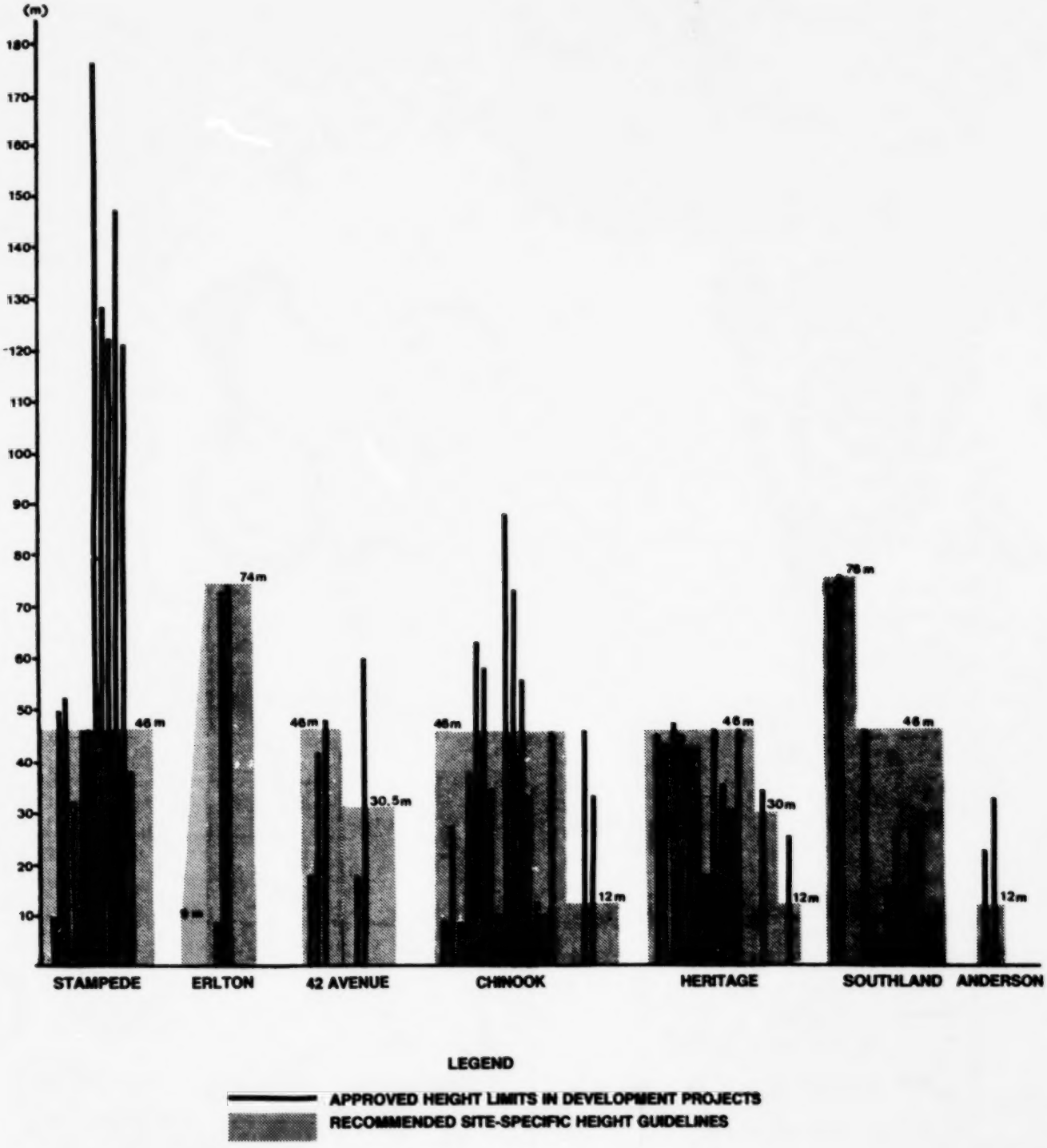
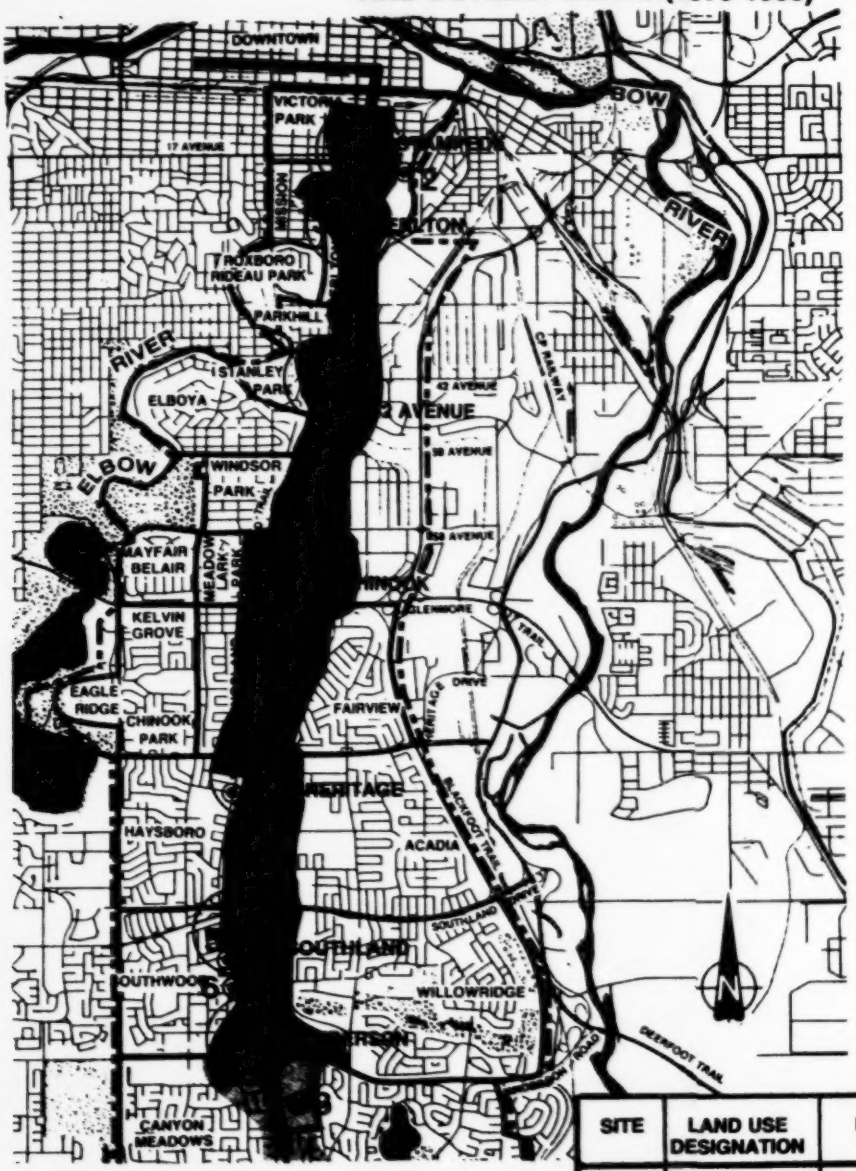


FIGURE 4 **CITY INITIATED LAND USE AMENDMENTS AND DEVELOPMENTS (1979-1983)**



SITE	LAND USE DESIGNATION	LAND USE
1	A	ROUND-UP CENTRE
2	DC	CALGARY SADDLEDOME
3	PE	LINDSAY PARK SPORTS COMPLEX
4	PS	LRT FACILITIES (Park 'n' Ride, Kiss 'n' Ride, Transit)
5	PS	LRT FACILITIES (Park 'n' Ride, Kiss 'n' Ride, Transit)
6	PE	PUBLIC PARK
7	PS	LRT FACILITIES (Park 'n' Ride, Kiss 'n' Ride, Transit, LRT Yard & Shop Complex)
8	RMH	MOBILE HOME PARK (to reflect current use)

LEGEND

- STUDY AREA BOUNDARY
- COMMUNITY BOUNDARIES
- LRT ALIGNMENT
- APPROVED LRT EXTENSION (future line)
- STATION AREA (400 metre radius)
- PRIMARY IMPACT AREA
- ⑤ CITY INITIATED LAND USE REDESIGNATIONS - NUMBERS IDENTIFY SITE REFERENCES

FIGURE 5 PROPOSED HOTEL SITES (Number of Rooms)

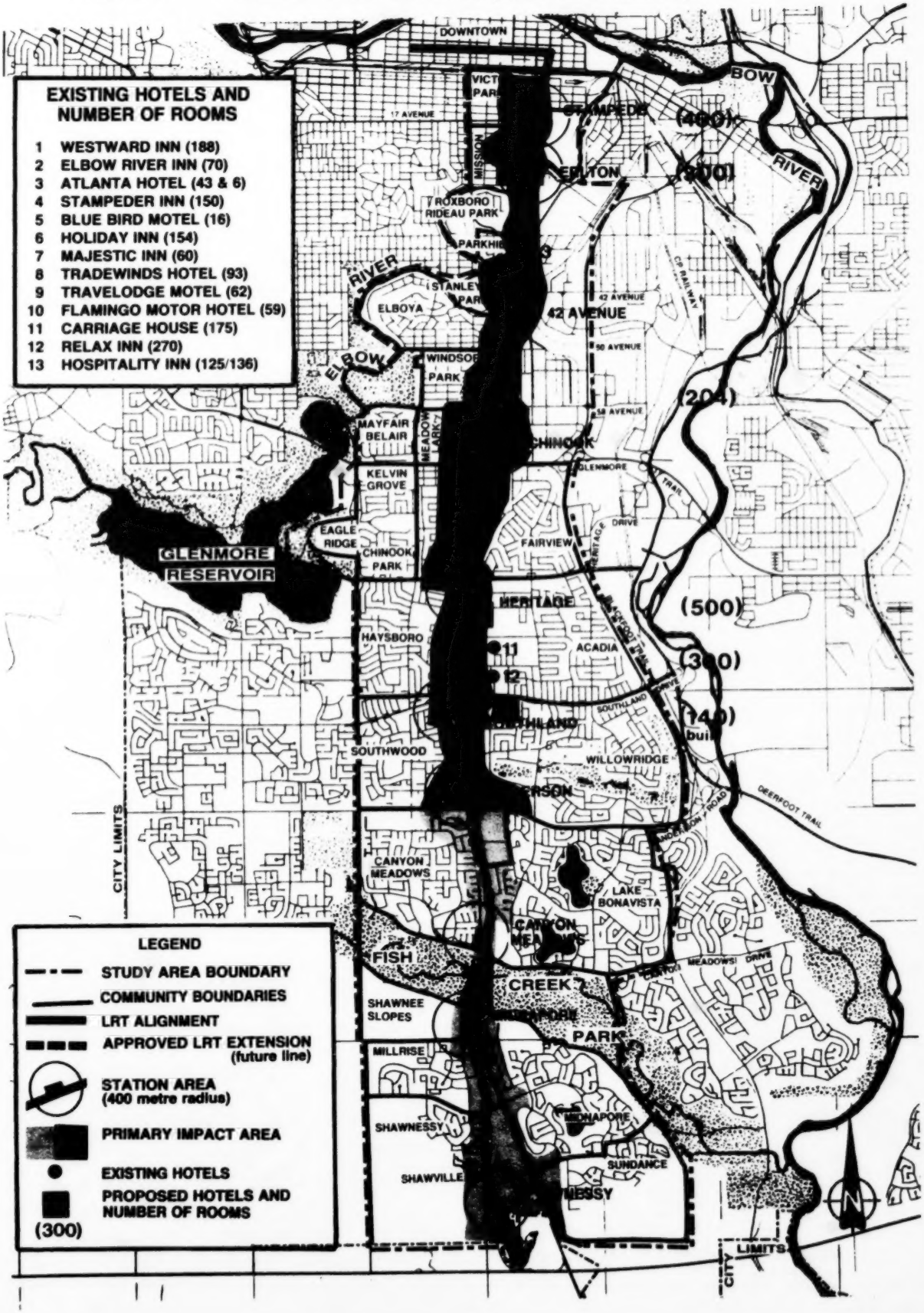
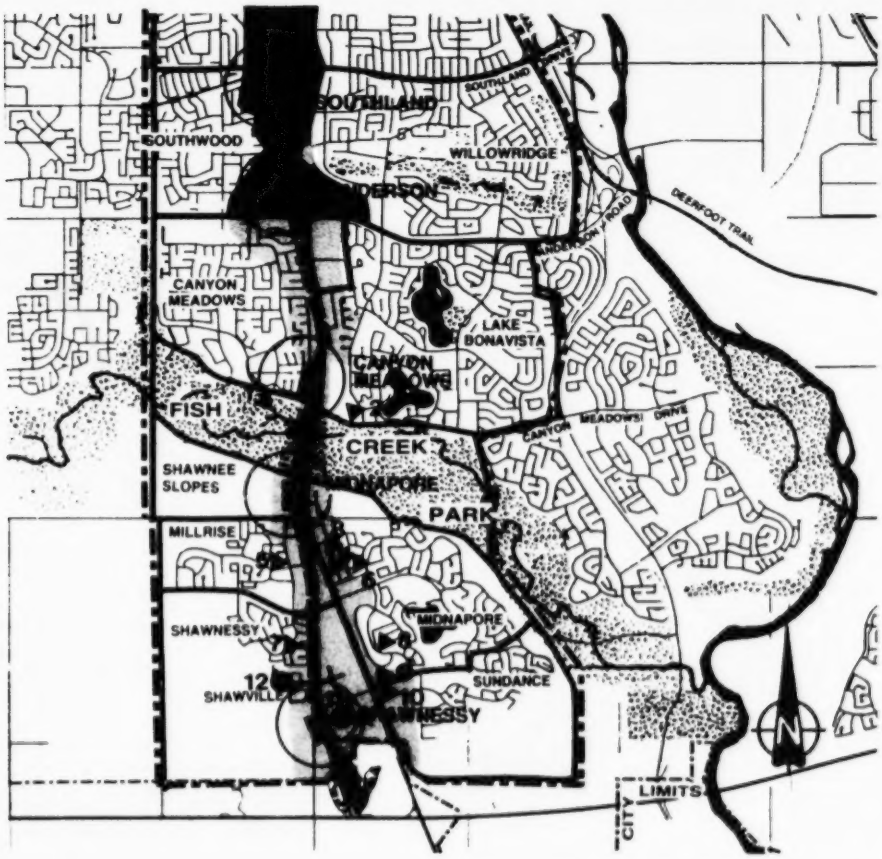


FIGURE 6 **"PRE-LRT REGION" DEVELOPMENT ACTIVITIES AND TRENDS**



SITE	LAND USE DESIGNATION	DENSITY (F.A.R.)	LAND USE
1	DC	(RM-4)	RESIDENTIAL
2	C-1		LOCAL COMMERCIAL (Service Station)
3	DC	2.0	OFFICE COMMERCIAL
4	DC	(C-1)	LOCAL COMMERCIAL
5	R-1, R-2A, PE, DC		TO ACCOMMODATE A RESIDENTIAL SUBDIVISION
6	R-1, R-2, PE, DC		" "
7	R-1, R-2, DC		" "
8	DC	(RM-4)	RESIDENTIAL
9	DC	3.0	OFFICE COMMERCIAL
10	DC	1.0	OFFICE COMMERCIAL
11	PS, DC		COMMERCIAL (future Hospital Site)
12	R-1, R-2, DC		TO ACCOMMODATE A RESIDENTIAL SUBDIVISION

LEGEND

- STUDY AREA BOUNDARY
- COMMUNITY BOUNDARIES
- LRT ALIGNMENT
- APPROVED LRT EXTENSION (future line)
- STATION AREA (400 metre radius)
- PRIMARY IMPACT AREA
- DEVELOPER INITIATED LAND USE REDESIGNATIONS
- UNDER CONSTRUCTION/ COMPLETED PROJECTS
- 7 NUMBERS IDENTIFY SITE REFRENCES

APPENDIX B

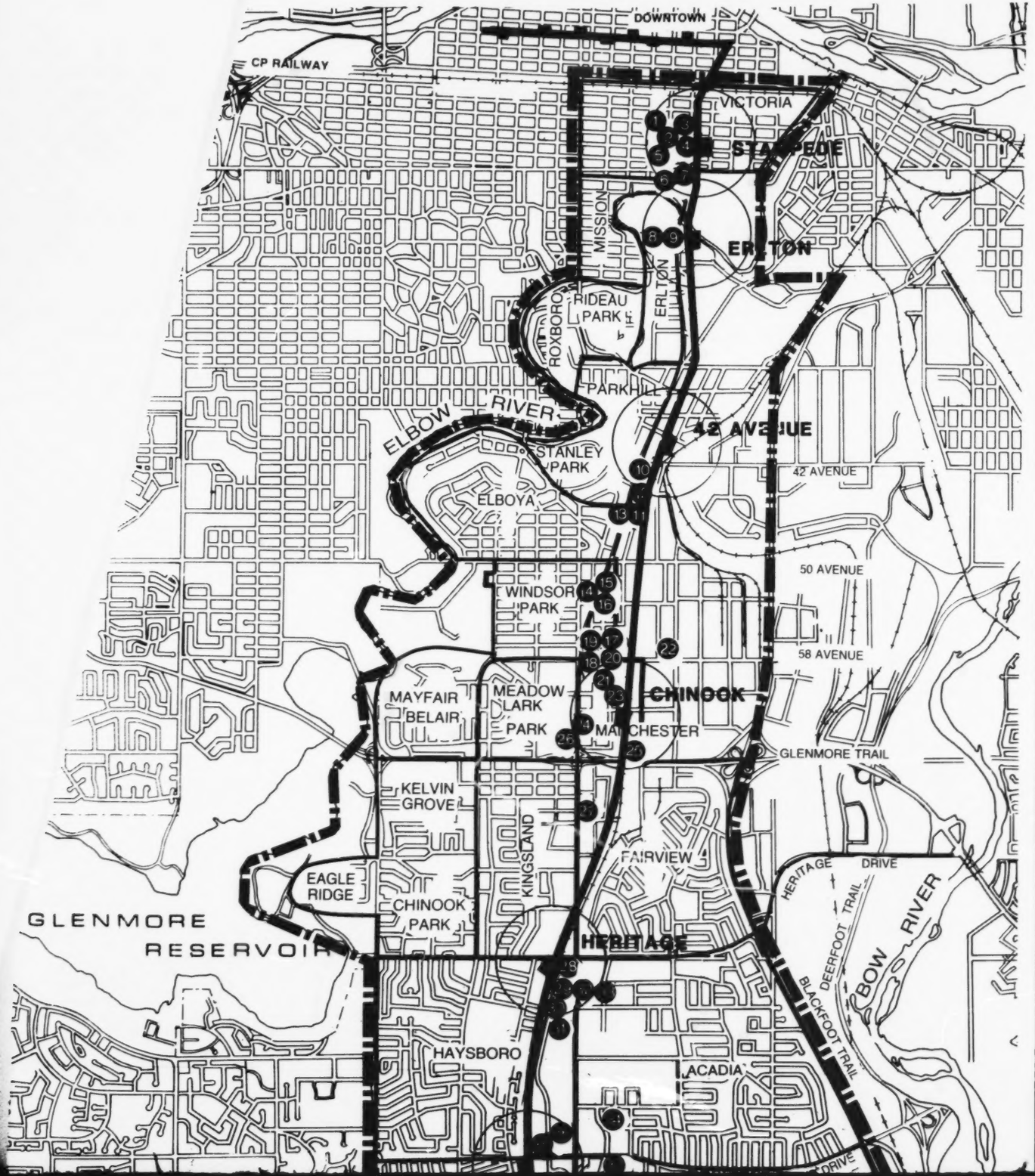
LIST OF LRT IMPACT STUDIES - CITY OF CALGARY PUBLICATIONS

1. LRT IMPACT STUDY
   PART I: HOME INTERVIEW SURVEY, City of Calgary Transportation Department, October, 1983.

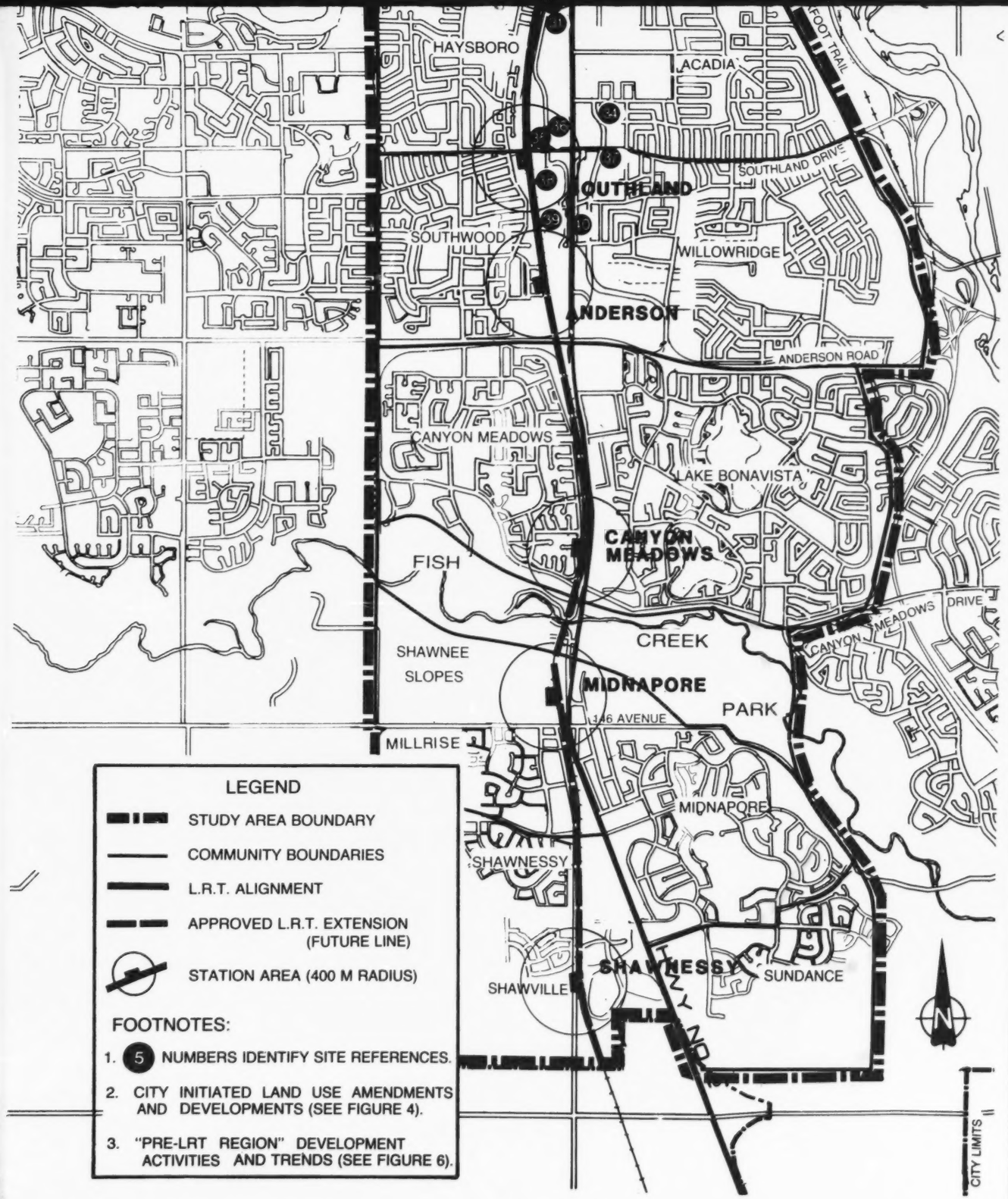
2. LRT IMPACT STUDY
   PART II: ON BOARD SURVEY, City of Calgary Transportation Department, August, 1983.

3. LRT SOUTH CORRIDOR IMPACT MONITORING STUDY
   LAND USE AND DEVELOPMENT TRENDS - SUMMARY REPORT (1979-1983), City of Calgary Planning & Building Department, November, 1984.

FIG. 7 L.R.T. SOUTH CORRIDOR LAND USE AMENDMENTS (1979-1983) SUMMARY CHART



	SITE	LAND USE DESIG-NATION	DENSITY (F.A.R.)	LAND USE				PUBLIC BENEFIT FEATURES				CONFORMITY
STAMPEDE	1	CM-2	8.0	☎					🏛		🏛	○
	2	DC	6.9	☎	🏠	🏗						◗ (h&d)
	3	DC	3.89	☎								●
	4	DC	9.04	☎	🏠	🏗	Ⓗ	🚶	🏛 (5)	🏛	🏛	○
	5	DC	3.0		🏠							●
	6	DC	5.0	☎	🏠	🏗				🏛	🏛	◗ (d)
	7	DC	5.95	☎								○
ERLTON	8	DC	2.4 (1.3-3.7)		🏠			🚶				●
	9	DC	5.68				Ⓗ	🚶	🏛	🏛		●
42nd AVENUE	10	DC	5.0	☎					🏛 (2)		🏛	○
	11	DC	3.07	☎		🏗	101					●
	12	DC	2.67	☎		🏗						●
	13	C-3	2.99		🏛	🏗		🚶				◗ (h)
CHINOOK	14	DC	1.2		🏛							●
	15	DC	4.28	☎	🏛	🏗						◗ (d)
	16	C-1	1.5	☎								●
	17	DC	1.5 3.0	☎	🏛							●
	18	DC	3.3	☎	🏛	🏗	Ⓗ	🚶				◗ (d)
	19	DC	3.93		🏛	🏗						◗ (d)
	20	DC	1.0	☎			🚗					●
	21	DC	3.0	☎	🏛							●
	22	DC	2.0	☎								○
	23	DC	5.0	☎	🏛	🏗		🚶	🏛 (2)			◗ (h)
	24	DC	4.87	☎	🏛	🏗						◗ (h)
	25	DC	3.49	☎	🏛	🏗	🚗	🚶	🏛			●



LEGEND

- STUDY AREA BOUNDARY
- COMMUNITY BOUNDARIES
- L.R.T. ALIGNMENT
- APPROVED L.R.T. EXTENSION (FUTURE LINE)
- STATION AREA (400 M RADIUS)

FOOTNOTES:

1. (5) NUMBERS IDENTIFY SITE REFERENCES.
2. CITY INITIATED LAND USE AMENDMENTS AND DEVELOPMENTS (SEE FIGURE 4).
3. "PRE-LRT REGION" DEVELOPMENT ACTIVITIES AND TRENDS (SEE FIGURE 6).

K	22	DC	2.0									○
	23	DC	5.0						(2)			◗ (h)
	24	DC	4.87									◗ (h)
	25	DC	3.49									●
	26	DC	3.0	CHINOOK CENTRE (EXISTING SHOPPING MALL AND PROFESSIONAL BUILDING)								●
	27	DC	4.0									◗ (h&d)
HERITAGE	28	DC	3.9									◗ (d)
	29	C-6										●
	30	DC	4.8									◗ (d)
	31	DC	2.9						(2)			●
	32	DC	1.7									●
	33	DC	3.48									○
SOUTHLAND	34	DC	1.4									●
	35	DC	7.6									○
	36	DC	3.79									●
	37	DC	2.0									●
	38	DC	2.8									●
	39	DC	2.8									●
ANDERSON	40	C-2	1.6									○

LEGEND

- RESIDENTIAL
- COMMERCIAL
  - Office
  - Hotel
  - Retail
  - Restaurant
  - Water-slide
  - Recreation
  - Daycare
- INDUSTRIAL

PUBLIC BENEFIT FEATURE CONTRIBUTIONS

- Mall
- (2) +15 Bridge (no. of bridges)
- Park
- Arcade
- Pedestrian Connection

CONFORMITY TO LAND USE STUDY RECOMMENDATIONS

- ● Conforming
- ◗ (h & d) Partially Conforming (height and/or density exceeding)
- ○ Nonconforming